

THE CLAIMS

What is claimed is:

- 5 1. A system for central management, storage and report generation of remotely captured paper transactions from documents and receipts comprising:
- one or more remote data access subsystems for capturing and sending paper transaction data comprising at least one
- 10 data access controller for managing the capturing and sending of the transaction data;
- at least one central data processing subsystem for processing, sending, verifying and storing the paper transaction data comprising a data management subsystem for
- 15 managing the processing, sending and storing of the transaction data; and
- at least one communication network for the transmission of the transaction data within and between said one or more data access subsystems and said at least one data processing
- 20 subsystem.
2. A system as in claim 1 wherein said one or more data access subsystems further comprise at least one scanner for capturing the paper transaction data.
- 25 3. A system as in claim 2 wherein said one or more data access subsystems also capture electronic transactions from credit cards, smart cards and debit cards, signature data or biometric data, further comprising:
- 30 at least one card interface for capturing the electronic transaction data;
- at least one signature interface for capturing an electronic signature; and
- at least one biometric interface for capturing biometric
- 35 data.

4. A system as in claim 3 wherein said at least one data access controller successively transforms the captured transaction data to a bitmap image, a compressed bitmap image, an encrypted, compressed bitmap image and an
5 encrypted, compressed bitmap image tagged with information identifying a location and time of the transaction data capture.

5. A system as in claim 4 wherein said one or more data
10 access subsystems further comprise digital storage for storing the tagged, encrypted, compressed bitmap image.

6. A system as in claim 5 wherein said at least one card interface initiates the electronic transaction.
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7. A system as in claim 6 wherein said one or more data access subsystems further comprise at least one printer for printing the paper transaction initiated by said at least one card interface.
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8. A system as in claim 7 wherein the paper transaction printed by said at least one printer includes data glyphs.

9. A system as in claim 1 wherein said data management
25 subsystem of said at least one data processing subsystem comprises:

at least one server for polling said one or more remote data access subsystems for transaction data;

a database subsystem for storing the transaction data in
30 a useful form;

a report generator for generating reports from the transaction data and providing data to software applications;

at least one central processing unit for managing the storing of the transaction data;

35 a domain name services program for dynamically assigning one of said at least one server to receive portions of the

transaction data for balancing the transaction data among said at least one server; and
a memory hierarchy.

- 5 10. A system as in claim 9 wherein said at least one server also polls for biometric and signature data, said database stores the biometric data and the signature data, and said at least one central processing unit verifies the biometric data and the signature data.
- 10 11. A system as in claim 9 wherein said memory hierarchy comprises at least one primary memory for storage of recently accessed transaction data and at least one secondary memory for storage of other transaction data.
- 15 12. A system as in claim 11 wherein said at least one secondary memory comprises at least one write once read many jukebox and at least one optical storage jukebox.
- 20 13. A system as in claim 12 wherein said at least one optical storage jukebox comprises read only memory technology including compact disc read only memory form factor metallic write once read many disc.
- 25 14. A system as in claim 9 wherein said database subsystem comprises at least one predefined template for partitioning the stored transaction data into panels and identifying locations of the panels.
- 30 15. A system as in claim 14 wherein said data processing subsystem further comprises a data entry gateway for correcting errors in the panels of stored transaction data.
- 35 16. A system as in claim 1 wherein said at least one communication network comprises:

at least one first local area network for transmitting data within a corresponding one of said one or more remote data access subsystems;

at least one second local area network for transmitting
5 data within a corresponding one of said at least one data processing subsystem; and

at least one wide area network for transmitting data between said one or more remote data access subsystems and said at least one data processing subsystem.

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17. A system as in claim 16 wherein said at least one communication network further comprises:

at least one modem for connecting said at least one first local area network of said one or more data access
15 subsystems to a corresponding one of said at least one second local area network of said at least one data processing subsystem through said at least one wide area network; and

at least one bank of modems for connecting said at least one second local area network of said at least one data
20 processing subsystem to a corresponding some of said at least one first local area network of said one or more data access subsystems through said at least one wide area network.

18. A system as in claim 1 further comprising at least
25 one data collecting subsystem for collecting and sending the electronic or paper transaction data comprising a further management subsystem for managing the collecting and sending of the transaction data.

30 19. A system as in claim 18 wherein said further data management subsystem of said at least one data collecting subsystem comprises:

at least one server for polling said one or more remote data access subsystems for transaction data;

35 a database for storing the transaction data in a useful form;

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at least one central processing unit for managing the collecting of the transaction data;

a domain name services program for dynamically assigning one of said at least one server to receive portions of the
5 transaction data for balancing the transaction data among said at least one server; and
a memory hierarchy.

20. A system as in claim 19 wherein said memory
10 hierarchy comprises at least one primary memory for collecting transaction data and at least one secondary memory for backup storage of the transaction data.

21. A system as in claim 20 wherein said at least one
15 secondary memory comprises at least one DLT jukebox.

22. A system as in claim 18 wherein said at least one communication network comprises:

at least one first local area network for transmitting
20 data within a corresponding one of said one or more remote data access subsystems;

at least one second local area network for transmitting data within a corresponding one of said at least one data collection subsystem;

25 at least one third local area network for transmitting data within a corresponding one of said at least one data processing subsystem; and

at least one wide area network for transmitting data between said one or more remote data access subsystems, said
30 at least one data collection subsystem and said at least one data processing subsystem.

23. A system as in claim 22 wherein said at least one communication network further comprises:

35 at least one first modem for connecting said at least one first local area network of said one or more data access subsystems to a corresponding one of said at least one second

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local area network through said at least one wide area network;

at least one bank of modems for connecting said at least one second local area network of said at least one data collection subsystem to a corresponding some of said at least one first local area network of said one or more data access subsystems through said at least one wide area network;

at least one first wide area network router for
connecting a corresponding one of said at least one second
10 local area network of said at least one data collecting
subsystem to said at least one wide area network; and

at least one second wide area network router for connecting a corresponding one of said at least one third local area network of said at least one data processing
15 subsystem to said at least one wide area network.

24. A system as in claim 23 wherein said at least one first wide area network and said at least one second wide area network comprises a carrier cloud, said carrier cloud
20 using a frame relay method for transmitting the transaction data.

25. A system as in claim 22 wherein said at least one second local area network and said at least one third local area network further comprises a corresponding one of at least one network switch for routing transaction data within said at least one second local area network and said at least one third local area network.

30 26. A method for central management, storage and verification of remotely captured paper transactions from documents and receipts comprising the steps of:

capturing and sending the paper transaction data at one or more remote locations;

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35      managing the capturing and sending of the transaction
      data;
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collecting, processing, sending and storing the transaction data at a central location;

managing the collecting, processing, sending and storing of the transaction data; and

5 transmitting the transaction data within and between the remote location(s) and the central location.

27. The method as in claim 26 wherein said managing the capturing and sending step comprises the steps of:

10 successively transforming the captured transaction data to a bitmap image, a compressed bitmap image, an encrypted, compressed bitmap image and an encrypted, compressed bitmap image tagged with information identifying a location and time of the transaction data capturing; and

15 storing the tagged, encrypted, compressed bitmap image.

28. The method as in claim 27 wherein said managing the capturing and sending step also captures electronic transactions from credit cards, smart cards and debit cards,
20 signature data or biometric data, further comprising the steps of:

initiating an electronic transaction;

capturing signature data;

capturing biometric data; and

25 printing a paper transaction with data glyphs for the initiated electronic transaction.

29. A method as in claim 26 wherein:

said capturing and sending step occurs at a plurality of
30 remote locations; and

said collecting, processing, sending and storing step occurs at a plurality of central locations.

30. A method as in claim 29 wherein said collecting,
35 processing, sending and storing step comprises the steps of:

polling the remote locations for transaction data with servers at the central locations;

storing the transaction data at the central location in a memory hierarchy, said storing maintains recently accessed transaction data in a primary memory and other transaction data in a secondary memory; and

- 5 dynamically assigning the servers at the central location to receive portions of the transaction data for balancing the transaction data among the servers; and
 generating reports from the transaction data and providing data to software applications.

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31. A method as in claim 30 wherein said storing the transaction data step comprises the steps of:

 partitioning the stored transaction data with predefined templates into panels; and

- 15 identifying locations of the panels.

32. A method as in claim 31 wherein said managing the collecting, processing, sending and storing of the transaction data step comprises correcting errors in the

- 20 panels of stored transaction data.

33. A method as in claim 32 further comprising the steps of:

- polling the remote locations for captured electronic
25 data, captured signature data and captured biometric data with servers at the central locations; and

 comparing the captured signature data and the captured biometric data to stored signature data and stored biometric data respectively for identification verification.

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34. A method as in claim 32 wherein said transmitting the transaction data step comprises the steps of:

- transmitting data within the remote locations;
 transmitting data from each remote location to a
35 corresponding central location; and
 transmitting data within the central locations.

35. A method as in claim 34 wherein said transmitting data from each remote location to a corresponding central location step comprises the steps of:

connecting each remote location to a corresponding
5 central location; and

connecting each central location to corresponding remote locations.

36. A method as in claim 29 further comprising the
10 steps of:

collecting and sending the electronic or paper transaction data at intermediate locations;

managing the collecting and sending of the transaction data; and

15 transmitting the transaction data within the intermediate location and between the intermediate locations and the remote locations and the central locations.

37. A method as in claim 36 wherein said managing the
20 collecting and sending step comprises the steps of:

polling the remote locations for transaction data with servers in the intermediate locations;

storing the transaction data in the intermediate locations in a useful form, said storing maintains the
25 transaction data in a primary memory of a memory hierarchy and performs backup storage of the transaction data into a secondary memory of the memory hierarchy; and

dynamically assigning the servers to receive portions of the transaction data for balancing the transaction data among
30 the servers.

38. The method as in claim 36 wherein said transmitting the transaction data step comprises the steps of:

transmitting data within the remote locations;

35 transmitting data from each remote location to a corresponding intermediate location;

transmitting data within the intermediate locations;

transmitting data from each intermediate location to corresponding central locations; and
transmitting data within the central locations.

5 39. A method as in claim 38 wherein said transmitting data from each remote location to corresponding intermediate locations step comprises the steps of:

connecting each remote location to a corresponding intermediate location; and

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10      connecting the intermediate locations to corresponding
      remote locations.
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40. A method as in claim 38 wherein said transmitting data from each intermediate location to corresponding central
15 locations comprises the steps of:

connecting each intermediate location to an external communication network; and

connecting the corresponding central locations to the communication network.

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41. A method as in claim 40 wherein said transmitting data from each intermediate location to corresponding central locations step further comprises the steps of:

packaging the transaction data into frames; and
25 transmitting the frames through the external
communication network.

42. A communication network for the transmission of data within and between one or more remote subsystems, at
30 least one intermediate subsystem and at least one central subsystem forming a tiered architecture wherein each of said at least one central data processing subsystem communicate with a corresponding some of said at least one data
collecting subsystem and each of said at least one data
35 collecting subsystem communicate with a corresponding some of said one or more data processing subsystems comprising:

at least one first local area network for transmitting data within a corresponding one of said one or more remote subsystems;

at least one second local area network for transmitting data within a corresponding one of said at least one intermediate subsystem;

at least one third local area network for transmitting data within a corresponding one of said at least one central subsystem; and

at least one wide area network for transmitting data between said one or more remote subsystems, said at least one intermediate subsystem and said at least one central subsystem.

43. A communication network as in claim 42 further comprising:

at least one first modem for connecting said at least one first local area network of said one or more remote subsystems to a corresponding one of said at least one second local area network through said at least one wide area network;

at least one bank of modems for connecting said at least one second local area network of said at least one intermediate subsystem to a corresponding one of said at least one first local area network of said one or more remote subsystems through said at least one wide area network;

at least one first wide area network router for connecting a corresponding one of said at least one second local area network of said at least one intermediate subsystem to said at least one wide area network; and

at least one second wide area network router for connecting a corresponding one of said at least one third local area network of said at least one central subsystem to said at least one wide area network.

44. A system as in claim 43 wherein said at least one first wide area network and said at least one second wide

area network comprises a carrier cloud which utilizes a frame relay method for transmitting the transaction data.

45. A system as in claim 44 wherein said at least one
5 second local area network and said at least one third local
area network further comprises a corresponding one of at
least one network switch for routing transaction data within
said at least one second local area network and said at least
one third local area network; and further wherein said data
10 comprises (a) electronic transactions from credit cards,
smart cards and debit cards, signature data or biometric
data, or (b) paper transactions from documents and receipts.

46. A method for transmitting data within and between
15 one or more remote subsystems, at least one intermediate
subsystem and at least one central subsystem in a tiered
manner wherein each of the central subsystems communicate
with a corresponding some of the intermediate subsystems and
each of the intermediate subsystems communicate with a
20 corresponding some of the remote subsystems comprising the
steps of:

transmitting data within the remote locations;
transmitting data from each remote location to a
corresponding intermediate location;

25 transmitting data within the intermediate locations;
transmitting data from each intermediate location to
corresponding central locations; and
transmitting data within the central locations.

30 47. A method as in claim 46 wherein said transmitting
data from each remote location to corresponding intermediate
locations step comprises the steps of:

connecting each remote location to a corresponding
intermediate location; and

35 connecting the intermediate locations to corresponding
remote locations.

48. A method as in claim 47 wherein said transmitting data from each intermediate location to corresponding central locations comprises the steps of:

connecting each intermediate location to an external
5 communication network; and

connecting the corresponding central locations to the external communication network.

49. A method as in claim 48 wherein said transmitting
10 data from each intermediate location to corresponding central locations step further comprises the steps of:

packaging the transaction data into frames; and
transmitting the frames through the external
communication network.

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50. A method as in claim 46 wherein said data is obtained from (a) electronic transactions from credit cards, smart cards and debit cards, signature data or biometric data, or (b) paper transactions from documents and receipts.

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51. A method for central management, storage and verification of remotely captured paper transactions from documents and receipts as in claim 33 wherein said comparing step further comprises the step of comparing said captured
25 electronic data to stored electronic data.

52. A method for central management, storage and verification of remotely captured paper transactions from documents and receipts as in claim 51 wherein said
30 transaction data comprises a payer bank's identification number, a payer bank's routing number, a payer bank's routing information, a payer's account number, a payer's check, a payer bank's draft, a check amount, a payee bank's identification number, a payee bank's routing information,
35 and a payee's account number.

53. A method for central management, storage and verification of remotely captured paper transactions from documents and receipts as in claim 52 wherein said managing the collecting, processing, sending and storing step further
5 comprises the step of performing said paper transaction by transferring funds electronically from a payer bank to a payee bank.

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